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मानक

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IS 2234 (1989): Ready Idli Mix [FAD 16: Foodgrains, Starches and Ready to Eat Foods]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
READY IDLI MIX — SPECIFICATION
(First Revision)

भारतीय मानक
तैयार ईडली मिश्रण — विशिष्ट
(पहला पुनरीक्षण)

UDC 664.696.9 IDL

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 25 January 1989, after the draft finalized by the Nutrition Sectional Committee had been approved by the Agricultural and Food Products Division Council.

Idli is a very popular breakfast item in South India. It is also being increasingly consumed in North India. Ready *idli* mix also offers export potentialities.

The traditional method of making the *idli* batter consists in grinding to a paste in a typical heavy grinding stone, water-soaked parboiled rice and decuticled black gram *dal* usually in the proportion 2 : 1 by mass and keeping the resultant product overnight or longer to ferment depending on the prevailing atmospheric temperature. Whole pepper may be added as an optional ingredient. The batter is later cooked in steam in moulds which gives the conventional shape to *idli*.

The process of making *idli* using the present mix involves suspending the mix in water (approximately 1.5 parts) to get a batter of appropriate consistency, and thereafter following the same procedure as for the traditional method. No fermentation of the mix or dough is required.

Considerable labour is involved in making the *idli* batter by traditional method. The use of ready *idli* mix dispenses with the laborious grinding process and is gaining popularity. It was, therefore, considered desirable to formulate an Indian Standard specification for the product so that a mix of the right quality would be available to consumers. This standard is expected to help in exercising necessary quality control in the manufacture of good quality ready *idli* mix under hygienic conditions.

This standard was first published in 1962. It is being revised to bring it in line with the latest developments in trade.

In the preparation of this standard, due consideration has been given to the *Prevention of Food Adulteration Act, 1954* and the Rules framed thereunder. Due consideration has also been given to the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977*. This standard is, however, subject to the restrictions imposed under these Rules, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

Indian Standard

READY IDLI MIX — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for ready *idli* mix.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard ready *idli* mix shall mean the mix containing rice, semolina, black gram (*Phaseolus mungo*) flour, edible common salt and baker's yeast (dried), and which conforms to the requirements given in 5.

4 INGREDIENTS

4.1 The ready *idli* mix shall be made from the following ingredients.

4.1.1 Rice Semolina

Made from parboiled rice, free from smell, and passing through IS Sieve 85 and retained on IS Sieve 40 [see IS : 460 (Part 1)-1985].

4.1.2 Black Gram Flour

Made from decuticled black gram *dal*; and passing through IS Sieve 18 [see IS : 460 (Part 1)-1985].

4.1.3 Salt

Conforming to IS 253 : 1985 or IS 7224 : 1985.

4.1.4 Baker's Yeast (Dried)

Conforming to IS 1320 : 1988.

4.2 Mixing of Ingredients

4.2.1 The required quantity of powdered edible salt shall be added to the rice semolina.

4.2.2 The yeast shall be powdered in a pestle and mortar and mixed with a small quantity of black gram flour, and then mixed with increasing quantities of black gram flour until the yeast is well mixed.

4.2.3 The black gram flour mixed with the yeast shall then be added to the mixture of salt and rice semolina and mixed thoroughly.

5 REQUIREMENTS

5.1 Description

The ready *idli* mix shall be in the form of a white to off-white powder, free from rancidity, insect or fungus infestation and from fermented, musty or other objectionable odour. It shall be free from added colours and flavours.

5.1.1 When tested by the method prescribed in Annex B, the material shall be free from dirt and other extraneous matter.

5.2 Microscopic Examination

When subjected to microscopic examination, the material shall not reveal the presence of any foreign matter other than that specified in 4.

5.3 The material shall be manufactured and packed in hygienic conditions (see IS 2491 : 1972).

5.4 The ready *idli* mix shall comply with the requirements given in Table 1.

6 PACKING AND MARKING

6.1 Packing

The ready *idli* mix shall be packed in flexible thermoplastic films of multilayer or monolayer construction, or their laminates with paper and/or aluminium foil so as to provide high resistance to the passage of oxygen and to produce an effective heat seal. The sealing shall be done hermetically with or without nitrogen flushing to retain the contents in a fresh condition.

6.2 Marking

The following particulars shall be marked or labelled on each container:

- a) Name of the material and trade-mark, if any;
- b) Name and address of the manufacturer;

- c) Batch or code number;
- d) Net mass in grams or kilograms;
- e) Date of manufacture;
- f) List of ingredients;
- g) Directions for use (for guidance, see Annex J);
- h) Date before which the material shall be used (the date to be decided by the manufacturer); and
- j) Any other details required under the Standards of Weights and Measures (Packaged Commodities) Rules, 1977.

7 SAMPLING

Representative samples of the material shall be

drawn and the conformity of the material to the requirements of the specification shall be determined according to the procedure given in Annex K.

8 TESTS

8.1 Tests shall be carried out in accordance with 5.1 and 5.2 and the relevant Annexes specified in Table 1.

8.2 Unless specified otherwise, pure chemicals and distilled water (see IS 1070 : 1977) shall be used where the use of water as reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

Table 1 Requirements for Ready IDLI Mix
(Clauses 5.4, 8.1 and K-5.2)

Sl No.	Characteristic	Requirement	Method of Test (Ref to Annex)
i)	Moisture, percent by mass <i>Max</i>	12.0	C
ii)	Total ash (on dry basis), percent by mass, <i>Max</i>	5.0	D
iii)	Acid insoluble ash (on dry basis), percent by mass, <i>Max</i>	0.2	E
iv)	Total protein (on dry basis), $N \times 6.25$, percent by mass, <i>Min</i>	12.0	F
v)	Crude fibre (on dry basis), percent by mass, <i>Max</i>	0.2	G
vi)	Carbohydrates, percent by mass, <i>Max</i>	70	(see Note)
vii)	Leavening index, <i>Min</i>	1.25	H

NOTE — The carbohydrate content shall be calculated by difference, that is, $100 - [\text{percent of protein (on dry basis)} + \text{percent of total ash (on dry basis)} + \text{percent of crude fibre (on dry basis)}]$.

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
253 : 1985	Specification for edible common salt (<i>third revision</i>)	1320 : 1988	Specification for baker's yeast (<i>third revision</i>)
265 : 1976	Specification for hydrochloric acid (<i>second revision</i>)	2491 : 1972	Code for hygienic conditions for food processing units (<i>first revision</i>)
460 (Part 1) : 1985	Specification for test sieves: Part 1 Wire cloth test sieves (<i>third revision</i>)	4905 : 1968	Methods for random sampling
1070 : 1977	Specification for water for general laboratory use (<i>second revision</i>)	7224 : 1985	Specification for iodized salt (<i>first revision</i>)
		12569 : 1989	Potato French fries—Specification

ANNEX B

(Clause 5.1.1)

DETERMINATION OF FREEDOM FROM DIRT AND EXTRANEEOUS MATTER

B-1 PROCEDURE

Take about 10 g of the material in a 250-ml beaker and add 100 ml of water. Stir the material with a glass rod to form a suspension

and allow it to stand for 2 hours. Examine the supernatant water, surface, and bottom of the sediment for dirt or other suspended and extraneous matter.

ANNEX C

[Table 1, Item (i)]

DETERMINATION OF MOISTURE

C-1 PROCEDURE

Weigh accurately about 5 g of the material in a dish made of porcelain; silica or platinum; previously dried in an air-oven and weighed. Place the dish in an air-oven maintained at $105 \pm 2^\circ\text{C}$ for five hours. Cool the dish in a desiccator and weigh. Heat again at $105 \pm 2^\circ\text{C}$ in the air-oven for 30 minutes. Cool the dish in the desiccator and weigh. Repeat this process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

NOTE — Preserve the dish containing this dried material for determination of total ash (see D-1).

C-2 CALCULATION

$$\text{Moisture, percent by mass} = \frac{100 (M_1 - M_2)}{M_1 - M}$$

where

M_1 = mass, in g, of the dish with material before drying;

M_2 = mass, in g, of the dish with material after drying; and

M = mass, in g, of the empty dish.

ANNEX D

[Table 1, Item (ii)]

DETERMINATION OF TOTAL ASH

D-1 PROCEDURE

Ignite the dried material in the dish (see C-1) with the flame of a suitable burner for about one hour. Complete the ignition by keeping in a muffle furnace at $600 \pm 20^\circ\text{C}$ until grey ash results. Cool in a desiccator and weigh. Heat again at $600 \pm 20^\circ\text{C}$ in the muffle furnace for 30 minutes. Cool in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

NOTE — Preserve the dish containing this ash for the determination of acid insoluble ash (see E-2).

D-2 CALCULATION

$$\text{Total ash (on dry basis), percent by mass} = \frac{100 (M_2 - M)}{M_1 - M}$$

where

M_2 = mass, in g, of the dish with ash;

M = mass, in g, of the empty dish (see M in C-2); and

M_1 = mass, in g, of the dish with dried material taken for the test (see M_2 in C-2).

ANNEX E

[Table 1, Item (iii)]

DETERMINATION OF ACID INSOLUBLE ASH

E-1 REAGENT

E-1.1 Dilute Hydrochloric Acid — Approximately 5 N, prepared from concentrated hydrochloric acid (see IS 265 : 1976).

E-2 PROCEDURE

To the ash contained in the dish (see D-1), add 25 ml of dilute hydrochloric acid, cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman filter paper No. 42 or its equivalent. Wash the filter paper with water until the washings are free from acid and return it to the dish. Keep it in an air-oven maintained at $105 \pm 2^\circ\text{C}$ for about 3 hours. Ignite in a muffle furnace at $600 \pm 20^\circ\text{C}$ for one hour. Cool the dish in a desiccator and weigh. Heat again at $600 \pm 20^\circ\text{C}$ in the muffle furnace for 30 minutes. Cool

the dish in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than one milligram. Note the lowest mass.

E-3 CALCULATION

Acid insoluble ash (on dry basis), percent by mass $= \frac{100 (M_2 - M)}{M_1 - M}$

where

M_2 = mass, in g, of the dish with acid insoluble ash;

M = mass, in g, of the empty dish (see M in C-2); and

M_1 = mass, in g, of the dish with dried material (see M_2 in C-2).

ANNEX F

[Table 1, Item (iv)]

DETERMINATION OF TOTAL PROTEIN

F-1 APPARATUS

F-1.1 A recommended apparatus, as assembled, is shown in Fig. 1.

F-1.1.1 Description

The assembly consists of a round-bottom flask of 1 000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube *B*. The other end of the bulb tube *B* is connected to the condenser *C* which is attached by means of a rubber tube to a dip tube *D* which dips into a known quantity of standard sulphuric acid contained in a beaker *E* of 250 ml capacity.

F-1.2 Kjeldahl Flask — of capacity 500 ml.

F-2 REAGENTS

F-2.1 Anhydrous Sodium Sulphate

F-2.2 Copper Sulphate

F-2.3 Concentrated Sulphuric Acid — sp gr 1.84.

F-2.4 Sodium Hydroxide Solution

Dissolve about 225 g of sodium hydroxide in 500 ml of water.

F-2.5 Standard Sulphuric Acid — 0.1 N.

F-2.6 Methyl Red Indicator Solution

Dissolve one gram of methyl red in 200 ml of rectified spirit (95 percent by volume).

F-2.7 Standard Sodium Hydroxide Solution — 0.1 N.

F-3 PROCEDURE

F-3.1 Transfer carefully about 0.25 g of the material, accurately weighed, to the Kjeldahl flask, taking precautions to see that the particles of the material do not stick on to the neck of the flask. Add about 10 g of anhydrous sodium sulphate, about 0.2 to 0.3 g of copper sulphate and 20 ml of concentrated sulphuric acid. Place the flask in an inclined position. Heat below the boiling point of the acid until frothing ceases. Increase heat until the acid boils vigorously and digest for 30 minutes after the mixture becomes clear and pale-green or colourless. Cool the contents of the flask.

Transfer quantitatively to the round-bottom flask with water, the total quantity of water used being about 200 ml. Add while shaking, a few pieces of pumice stone to prevent bumping. Add about 50 ml of sodium hydroxide solution (which is sufficient to make the solution alkaline) carefully through the side of the flask so that it does not mix at once with the acid solution but forms a layer below the acid layer. Assemble the apparatus as shown in Fig. 1 taking care that the dip tube extends below the surface of the standard sulphuric acid contained in the beaker. Mix the contents of the flask by shaking and distil until all ammonia has passed over into standard sulphuric acid. Shut the burner off and immediately detach the flask from the condenser. Wash the dip tube carefully so that all traces of the condenser are transferred to the beaker. When all the washings have drained into the beaker, add two or three drops of methyl red indicator solution and titrate with standard sodium hydroxide solution.

F-3.2 Carry out a blank determination using all reagents in the same quantities but without

the material to be tested.

F-4 CALCULATION

$$\text{Total portein (on dry basis), percent by mass} = \frac{875 (B - A) N}{M (100 - m)}$$

where

B = volume, in ml, of standard sodium hydroxide solution used to neutralize the acid in the blank determination;

A = volume, in ml, of standard sodium hydroxide solution used to neutralize the excess of acid in the test with the material;

N = Normality of standard sodium hydroxide solution;

M = mass, in g, of dried material taken for the test; and

m = moisture, percent by mass, in the material (see C-2).

ANNEX G

[Table 1, Item (v)]

DETERMINATION OF CRUDE FIBRE

G-1 REAGENTS

G-1.1 Dilute Sulphuric Acid — 1.25 percent (m/v), accurately prepared.

G-1.2 Sodium Hydroxide Solution — 1.25 percent (m/v), accurately prepared.

G-1.3 Ethyl Alcohol — 95 percent (m/v).

G-2 PROCEDURE

Weigh accurately about 2.5 g of the material and transfer it to a 1-litre flask. Take 200 ml of dilute sulphuric acid in a beaker and bring to boil. Transfer the whole of the boiling acid to the flask and immediately connect the flask with a water-cooled reflux condenser and heat so that the contents of the flask begin to boil within one minute. Rotate the flask frequently taking care to keep the material from remaining on the sides of the flask and out of contact with the acid. Continue boiling for 30 minutes. Remove the flask and filter through a fine linen (about 18 threads to a centimetre) held in a funnel, and wash with boiling water until the washings are no longer acid to litmus. Bring to boil 200 ml of sodium hydroxide solution under a reflux condenser. Wash the residue on the litmus into the flask with the boiling sodium hydroxide solution. Immediately

connect the flask with the reflux condenser and boil for exactly 30 minutes. Remove the flask and immediately filter through the filtering cloth. Wash the residue thoroughly with boiling water and transfer to a Gooch crucible prepared with a thin but compact layer of ignited asbestos. Wash the residue thoroughly, first with hot water and then with about 15 ml of ethyl alcohol. Dry the Gooch crucible and contents at $105 \pm 2^\circ\text{C}$ in an oven until the difference between two successive weighings is less than one milligram. Cool and weigh. Incinerate the contents of Gooch crucible in an electric muffle furnace at $600 \pm 20^\circ\text{C}$ until the carbonaceous matter is burnt. Cool the Gooch crucible containing ash in desiccator, and weigh.

G-3 CALCULATION

$$\text{Crude fibre (on dry basis), percent by mass} = \frac{10\,000 (M_1 - M_2)}{M}$$

where

M_1 = mass, in g, of Gooch crucible and contents before ashing;

M_2 = mass, in g, of Gooch crucible and contents after ashing; and

M = mass, in g, of the dried material taken for the test.

ANNEX H

[Table 1, Item (vii)]

DETERMINATION OF LEAVENING INDEX

H-1 PROCEDURE

Add 100 g of mix with gentle stirring, into 250 ml water in a beaker and make a uniform batter without lumps. Transfer the batter to a 500 ml measuring cylinder and note the initial volume. Note the volume after 15 minutes.

H-2 CALCULATION

$$\text{Leavening index} = \frac{V}{v}$$

where

V = final volume of the batter, and

v = initial volume of the batter.

ANNEX J

[Clause 6.2 (g)]

METHOD OF PREPARATION OF BATTER

J-1 PROCEDURE

Mix 2 parts by volume of the *idli* mix with 3 parts by volume of potable water and blend into a batter, breaking up any lumps that may be formed. Add a small quantity of butter-milk (about a teaspoon for every 500 g). Mix well again and allow to ferment. The batter may be stirred once or twice at intervals with a

spoon. Add seasonings such as black or white pepper or other spices, if desired.

It takes about 18 hours at the temperature range of 27 to 30°C for the proper fermentation, of batter after it is mixed. For ensuring proper fermentation, it is recommended that the *idli* batter be maintained at the temperature range by cooling or warming, as the case may be.

ANNEX K

(Clause 7)

SAMPLING OF READY IDLI MIX

K-1 GENERAL REQUIREMENTS OF SAMPLING

In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

K-1.1 Sampling shall be taken in a protected place not exposed to damp air, dust or soot.

K-1.2 The sampling instrument shall be clean and dry when used.

K-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

K-1.4 The samples shall be placed in clean and dry tin containers. The sample containers shall be of such a size that they are almost completely filled by the sample.

K-1.5 Each container shall be sealed airtight after filling and shall be marked with full details

of sampling, date of sampling, batch or code number, name of manufacturer and other important particulars of the consignment.

K-1.6 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

K-1.7 Sampling shall be done by a person agreed to between the purchaser and the supplier and in the presence of the purchaser (or his representative) and the supplier (or his representative).

K-2 SCALE AND SAMPLING

K-2.1 Lot

All the containers in a single consignment belonging to the same batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture, the containers of the same batch shall be grouped together and each such group shall constitute a separate lot.

K-2.1.1 Samples shall be tested from each lot separately for ascertaining conformity of the material to the requirements of the specification.

K-2.2 The number of containers to be tested from a lot shall depend on the size of the lot and shall be in accordance with Table 2.

K-2.3 These containers shall be chosen at random from the lot. In order to ensure the randomness of selection, procedure given in IS 4905 : 1968 may be followed.

Table 2 Number of Containers to be Selected for Sampling

(Clause K-2.2)

Lot Size N	Sample Size n
3 to 50	3
51 to 100	4
101 to 300	5
301 to 500	6
501 to 1 000	7
1 001 and above	8 ^c

K-3 TEST SAMPLES AND REFEREE SAMPLES

K-3.1 Draw with a suitable sampling instrument, small portions of the material from different parts of each container selected according to **K-2.3**. The total quantity of material drawn from each container shall be sufficient to make triplicate determinations for all the characteristics given in the specification.

K-3.2 Mix all portions of material drawn from the same container thoroughly. Out of this mixture, a small but approximately equal quantity of material shall be taken from each selected container and shall be well mixed so as to form a composite sample weighing about 500 g. This composite sample shall be divided into three equal parts, one for the purchaser, another for the vendor and the third for the referee. Each of these parts shall be transferred to thoroughly clean and dry sample containers which shall be sealed airtight and labelled with full identification particulars given in **K-1.5**.

K-3.3 The remaining portions of the material from each selected container (after a small

quantity needed for the composite sample has been taken) shall be divided into three equal parts, each of which shall weigh not less than 100 g. These parts shall be transferred to thoroughly clean and dry sample containers which shall be sealed airtight labelled with full identification particulars given in **K-1.5**. The material in each such container shall constitute an individual test sample. These individual test samples shall be separated into three identical sets of test samples in such a way that each set has a test sample representing each container selected according to **K-2.2**.

K-3.4 Referee Sample

The referee sample shall consist of a set of individual samples (**K-3.3**) and the composite sample (**K-3.2**) marked for this purpose and shall bear the seals of the purchaser and the supplier. These shall be kept at a place agreed to between the purchaser and the supplier and shall be used in case of dispute between the two.

K-4 NUMBER OF TESTS

K-4.1 Tests for determination of leavening index, acid insoluble ash, and total protein content shall be conducted on each of the individual samples constituting the set of test samples (see **K-3.3**).

K-4.2 Tests for the remaining characteristics, namely, freedom from dirt and extraneous matter, examination, moisture, carbohydrates and crude fibre shall be conducted on the composite sample (see **K-3.2**).

K-5 CRITERIA FOR CONFORMITY

K-5.1 For Individual Samples

The lot shall be declared to satisfy the requirements of leavening index acid insoluble ash, total ash and total proteins content if each of the test results satisfy the corresponding requirement given in **5.4**.

K-5.2 For Composite Samples

The test results on the composite samples shall meet the corresponding requirements specified in **5.1**, **5.2** and Table 1.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of Standard Mark may be granted to manufacturers or processors may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

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Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 331 01 31 331 13 75
---	--------------------------

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola CALCUTTA 700054	36 24 99
---	----------

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	{ 2 18 43 3 16 41
--	----------------------

Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113	{ 41 24 42 41 25 19 41 29 16
--	------------------------------------

Western : Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	6 32 92 95
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Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.
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TO
IS 2234 : 1989 READY IDLI MIX — SPECIFICATION
(First Revision)

(Page 1, clause 3, line 2) — Delete the 'comma' between 'rice' and 'semolina'.

(Page 1, clause 6.1, line 5) — Insert the words 'and water vapour' after the word 'oxygen'.

(Page 2, Table 1) — Insert the following requirements at the end:

<i>Sl No.</i>	<i>Characteristic</i>	<i>Requirement</i>	<i>Method of Test (Ref to IS)</i>
viii)	<i>Salmonella</i>	Absent (in 1 g)	} IS 5887 (Part 3) : 1976
ix)	<i>Shigella</i>	Absent (in 1 g)	
x)	<i>E. Coli</i>	Absent (in 1 g)	IS 5887 (Part 1) : 1976

(Page 2, Annex A) — Insert the following at the end:

'5887 (Part 1) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 1 Isolation, identification and enumeration of <i>Escherichia coli</i> (first revision)
5887 (Part 3) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 3 Isolation and identification of <i>Salmonella</i> and <i>Shigella</i> (first revision).'

(FADC 21)